WWW.AZCLIMATECHANGE.US

Transportation and Land Use Sector GHG Reduction Policy Options

Prepared for TWG call #4, October 26, 2005, 8:00-9:30 a.m.

Potential Emission Reductions *	Potential Cost or Cost Savings *
High (H): At least 1 Million Metric Tons (MMT) carbon dioxide equivalent (CO_2e) per year by 2020 (~1% of current AZ emissions)	**High (H)**: $50 per Metric Ton CO_2e ($MTCO_2e$) or above
Medium (M): From 0.1 to 1 MMT CO_2e per year by 2020	**Medium (M):** $5-50/$MTCO_2e$
Low (L): Less than 0.1 MMT CO_2e per year by 2020	**Low (L):** Less than $5/$MTCO_2e$
Uncertain (U): Not able to estimate at this time	**Cost Savings**: Options that save money, i.e., that have "negative costs."
	Uncertain (U): Not able to estimate at this time

***** "Potential" here connotes rough initial estimate based in part on experience in other states. Also, several measures may overlap in terms of emissions reductions and/or cost impacts. Estimates assume measures would be implemented independently from other measures.

Definition of Priorities for Analysis:

- **High:** High priority options will be analyzed first.
- **Medium:** Medium priority options will be analyzed next, time and resources permitting.
- **Low**: Low priority options will be analyzed last, time and resources permitting.

**** Options marked with a double asterisk (**) indicate options that are at least partially "base case" policies, i.e., that have been or will be implemented at some level in Arizona.** Options discussed by CCAG (9/29/05) are marked in yellow.

Option No.	GHG Reduction Policy Option	Priority for Analysis	Potential GHG Emissions Reduction	Potential Cost or Cost Savings	Ancillary Impacts, Feasibility Considerations	Notes
1.	**PASSENGER VEHICLE GHG EMISSION RATES**					
1.1	**Vehicle Technology**					
1.1.1	California GHG Emission Standards for Light-duty Vehicles	**H**	**H**	**L**	Opinions vary sharply on cost. Legal challenge pending.	Option reviewed by CCAG
1.1.2	California LEV-2 Emission Standards (option: w/ or w/out Advanced Technology Component)	TBD	**L**	**L/M**	May be attractive as SIP option due to reduction in conventional air pollution	
1.1.3	State R&D on Low-GHG Vehicle Technology (e.g., fuel cell)	**L**	**L**	**?**	Best coupled w/ federal dollars	
1.1.4	Add-on Technologies (Low Friction Oil, Low-Rolling Resistance Tires)	**M**	**L**	**Cost Savings/L**		
1.2	**Vehicle Operation**					
1.2.1	Lower and/or Enforce Speed Limits	**M**	**L**	**?**		
1.2.2	Vehicle Maintenance, Driver Training	**M**	**L**	**?**		
1.2.3	Transportation System Management	TBD	**?**	**?**		
1.2.4	Improved Traffic Flow	TBD	**?**	**?**		Measure added by CCAG
1.3	**Incentives & Disincentives**					
1.3.1	*Deleted: Procurement of Efficient Fleet Vehicles [moved to new 3.4]*					
1.3.2	Feebates (state-specific or regional) *[Charge a fee on purchases of relatively high-emitting vehicles and give a rebate on the purchase of relatively low-emitting vehicles. Overall, fees/rebates are revenue neutral.]*	**M**	**L/M**	**?**	Considered in many states but not adopted.	
1.3.3	GHG-based registration fees	**M**	**L**	**?**		

Option No.	GHG Reduction Policy Option	Priority for Analysis	Potential GHG Emissions Reduction	Potential Cost or Cost Savings	Ancillary Impacts, Feasibility Considerations	Notes
1.3.4	Tax Credits for Fuel Efficient Vehicles	**L**	**L**	**?**	Federal tax code provides tax credits for alternative fuel vehicles	
1.3.5	Vehicle Scrappage	**L**	**L**	**L/M**	Pilots undertaken in several cities.	
1.3.6	Support for Federal Windfall Profit Tax on Oil Companies *[tax income to be used for efficient vehicle incentives]*	TBD	**?**	**?**		Measure added by CCAG
2.	**LAND USE AND LOCATION EFFICIENCY**					
2.1	**General** ***[Option: Treat these as options as a bundle]***					
2.1.1	Infill, Brownfield Re-development	**H**	**H**	**?**	Arizona Brownfields Cleanup Revolving Loan Fund, Prospective Purchaser Agreement	Bundle reviewed by CCAG
2.1.2	Transit-Oriented Development	**H**	**H**	**?**		Bundle reviewed by CCAG
2.1.3	Smart Growth Planning, Modeling, Tools	**H**	**H**	**?**	Growing Smarter Act [1998], Growing Smarter Plus Act [2000], Growing Smarter Oversight Council	Bundle reviewed by CCAG
2.1.4	Targeted Open Space Protection	**H**	**H**	**?**		Bundle reviewed by CCAG
3.	**INCREASING LOW-GHG TRAVEL OPTIONS**					
3.1	**Increase Transportation Funding for Efficient Modes**					
3.1.1	Make better use of CMAQ funds	**H**	**L**	**L**	AZ has 90% obligation rate.	Only MAG is eligible for funds
3.1.2	Expand Transit Infrastructure (rail, bus, BRT), Improve Transit Service, Promotion, and Marketing *[subsumes previous 9/21 matrix items 3.1.2, 3.1.3, 3.1.5]*	**H**	**L**	**M/H**	BRT in Phoenix is very successful	Light rail project approved for Phoenix-Mesa-Tempe [$1.3 billion / 20 miles]. Target date of 2008. ADOT public transit grant funds are targeted at rural and special needs users.

Option No.	GHG Reduction Policy Option	Priority for Analysis	Potential GHG Emissions Reduction	Potential Cost or Cost Savings	Ancillary Impacts, Feasibility Considerations	Notes
3.1.3	Bike and Pedestrian Infrastructure	**H**	**L**	**?**	ADOT Bike and Pedestrian Program www.azbikeped.org/	
3.1.4	HOV lanes	**L**	**L**	**?**		
3.1.5	"Fix-it-First" *[Earmark transportation funds toward the repair of existing transportation network before funding new transportation infrastructure]*	**L**	**L/M**	**?**		

Option No.	GHG Reduction Policy Option	Priority for Analysis	Potential GHG Emissions Reduction	Potential Cost or Cost Savings	Ancillary Impacts, Feasibility Considerations	Notes
3.1.6	Transit Prioritization (signal prioritization, HOV lanes)	**L**	**L**	**?**		
3.1.7	Telecommute and Live-Near-Your-Work	**L**	**L**	**?**	See esp. Pima County's Voluntary No-Drive Day. AZ does some encouragement telecommuting on bad air ai quality days.	
3.1.8	Car sharing / car pooling	**L**	**L**	**?**		
3.1.9	E-Commerce	**L**	**L**	**?**		
3.2	**Incentives & Disincentives**					
3.2.1	Employer-provided Commuter Incentives (transit passes, , vanpools, preferential parking) *[includes "Parking Cash Out" -- an employer that offers free parking also offers the parking subsidy in cash)*	**L**	**?**	**?**		Significant current activity in AZ
3.2.2	VMT Tax *[tax on miles driven]*	**L**	**L/M**	**?**		
3.2.3	Pay As You Drive Insurance *[part of a vehicle's insurance premium is determined by annual miles driven]*	**L**			Revenue neutral to drivers a whole	
3.2.4	Increased Fuel Tax (w/ targeted use of revenue towards travel alternatives)	**L**	**L**	**?**		
3.2.5	Location-Efficient Mortgages *[favorable mortgage terms reflecting lower cost-of-living in mixed-use communities near public transportation*	**M**	**L**	**?**		
3.2.6	Congestion Pricing (or tolls) (w/ targeted use of revenue towards travel alternatives)	**M**	**?**	**?**		See London experience
3.2.7	Parking Pricing or Supply Restrictions	**L**				
3.2.8	Transit Pricing Incentives	**L**				

Option No.	GHG Reduction Policy Option	Priority for Analysis	Potential GHG Emissions Reduction	Potential Cost or Cost Savings	Ancillary Impacts, Feasibility Considerations	Notes
3.2.9	GHG Offset Requirements for Large Developments *[Require developer to offset GHG emissions attributable to a development]*	**L**				
3.2.10	Benefits for Low GHG Vehicles (e.g., preferential parking, use of HOV lanes)	**M**				
3.3	**Fuel Measures**					
3.3.1	Low-GHG Fuel Standard (e.g., minimum ethanol or biodiesel content)	TBD	**H**	**L/M**	TBD	Biodiesel can increase NOx
3.3.2	*Deleted: Low-GHG Fuel for State Fleets (e.g., ethanol, biodiesel, compressed natural gas (CNG), electric). Moved to 3.4.1.*	TBD				
3.3.3	Alternative fuel expansion (biodiesel, LPG, cellulosic ethanol)	TBD	**M**	**L/M**	Some CNG bus expansion in public transit, school districts, and at airports	
3.3.4	Expand Alternative Fuel Infrastructure Development (e.g. hydrogen, CNG)	TBD	**L**	**n/a**		
3.4	**Fleet Vehicles**					
3.4.1	Low-GHG Fuel for State Fleets (e.g., ethanol, biodiesel, compressed natural gas (CNG), electric)	TBD	**L**	**L/M**		
3.4.2	Promote Low-GHG Fuel for Private Fleets	TBD	**L**	**L/M**		
4.	**FREIGHT**					
4.1	**Vehicle Technology**					
4.1.1	Vehicle Technology Improvements (e.g., engines, aerodynamics)	TBD	**L**	**?**	New EPA emission standards for heavy-duty engines take effect in 2007.	

Option No.	GHG Reduction Policy Option	Priority for Analysis	Potential GHG Emissions Reduction	Potential Cost or Cost Savings	Ancillary Impacts, Feasibility Considerations	Notes
4.1.2	Voluntary diesel retrofit program	TBD	**L**	**L/M**	See EPA National Clean Diesel Campaign	
4.1.3	Low-sulfur diesel	TBD	**L**	**H**	New EPA fuel standards for low-sulfur diesel take effect in 2006.	
4.1.4	Black carbon control technologies (e.g., use of particulate traps, other complementary technologies)	TBD	**?**	**M**	Large co-benefits in PM reduction	
4.2	**Vehicle Operation** ***[Option: Treat these as options as a bundle]***					
4.2.1	Freight Logistics Improvements/GIS	TBD				
4.2.2	Enforce Speed Limits	TBD				
4.2.3	Improve Traffic Flow	TBD				
4.2.4	Increased Size & Weight of Trucks	TBD				
4.2.5	Pre-clearance at Scale Houses	TBD				
4.2.6	Promote Truck Stop Electrification *[reduces idling]*	TBD				
4.2.7	Enforce Anti-Idling	TBD				Need to enforce current ordinances
4.2.8	Intermodal Freight Initiatives *[increase rail use through better intermodal connections]*	TBD			See e.g. EPA SmartWay program	
4.3	**Incentives & Disincentives**					
4.3.1	*Deleted: Procurement of Fuel Efficient Fleet Vehicles (public, private or other) [combined w/ 3.4.2 above]*					
4.3.2	Incentives to Retire or Improve Older Less Efficient Vehicles	TBD				

Option No.	GHG Reduction Policy Option	Priority for Analysis	Potential GHG Emissions Reduction	Potential Cost or Cost Savings	Ancillary Impacts, Feasibility Considerations	Notes
4.3.3	Maintenance and Driver Training *[to improve fuel efficiency]*	TBD				
4.3.4	Increased Truck Tolls or Highway User Fees	TBD				
4.4	**Intercity Travel: Aviation, High Speed Rail, Bus**					
4.4.1	*Deleted: High-speed Rail [combined with 3.1.5]*					
4.4.2	Integrated Aviation, Rail, Bus Networks	TBD				
4.4.3	Aircraft emissions *[improved operation of aircraft and runway management]*	TBD				
4.4.4	Use of Alternate Fuels in Airport Ground Equipment	TBD				
4.5	**Off-Road Vehicles (construction equipment, out-board motors, ATVs, etc)**					
4.5.1	Incentives for Purchase of Efficient Vehicles/Equipment	TBD				
4.5.2	Improved Operations, Operator Training	TBD				
4.5.3	Maintenance Improvements	TBD				
4.5.4	Increased Use of Alternative Fuels or Low Sulfur Diesel	TBD				AZ already has 100% low sulfur diesel.